mita®

SRDF-1

SERVICE MANUAL

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mita®

Safety precautions

This booklet provides safety warnings and precautions for our service personnel to ensure the safety of their customers, their machines as well as themselves during maintenance activities. Service personnel are advised to read this booklet carefully to familiarize themselves with the warnings and precautions described here before engaging in maintenance activities.

Safety warnings and precautions

Various symbols are used to protect our service personnel and customers from physical danger and to prevent damage to their property. These symbols are described below:

⚠DANGER: High risk of serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

⚠WARNING: Serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

⚠CAUTION: Bodily injury or damage to property may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

Symbols

The triangle (△) symbol indicates a warning including danger and caution. The specific point of attention is shown inside the symbol.

General warning.

Warning of risk of electric shock.

Warning of high temperature.

⃠ indicates a prohibited action. The specific prohibition is shown inside the symbol.

General prohibited action.

Disassembly prohibited.

● indicates that action is required. The specific action required is shown inside the symbol.

General action required.

Remove the power plug from the wall outlet.

Always ground the copier.

1. Installation Precautions

⚠WARNING

- Do not use a power supply with a voltage other than that specified. Avoid multiple connections to one outlet: they may cause fire or electric shock. When using an extension cable, always check that it is adequate for the rated current. .....

- Connect the ground wire to a suitable grounding point. Not grounding the copier may cause fire or electric shock. Connecting the earth wire to an object not approved for the purpose may cause explosion or electric shock. Never connect the ground cable to any of the following: gas pipes, lightning rods, ground cables for telephone lines and water pipes or faucets not approved by the proper authorities. .....

⚠CAUTION:

- Do not place the copier on an infirm or angled surface: the copier may tip over, causing injury. .....

- Do not install the copier in a humid or dusty place. This may cause fire or electric shock. .....

- Do not install the copier near a radiator, heater, other heat source or near flammable material. This may cause fire. .....

- Allow sufficient space around the copier to allow the ventilation grills to keep the machine as cool as possible. Insufficient ventilation may cause heat buildup and poor copying performance. .....

- Always handle the machine by the correct locations when moving it. ....

- Always use anti-toppling and locking devices on copiers so equipped. Failure to do this may cause the copier to move unexpectedly or topple, leading to injury. .....

- Avoid inhaling toner or developer excessively. Protect the eyes. If toner or developer is accidentally ingested, drink a lot of water to dilute it in the stomach and obtain medical attention immediately. If it gets into the eyes, rinse immediately with copious amounts of water and obtain medical attention. .....

- Advice customers that they must always follow the safety warnings and precautions in the copier's instruction handbook. .....

2. Precautions for Maintenance

⚠WARNING

- Always remove the power plug from the wall outlet before starting machine disassembly. .....

- Always follow the procedures for maintenance described in the service manual and other related brochures. .....

- Under no circumstances attempt to bypass or disable safety features including safety mechanisms and protective circuits. .....

- Always use parts having the correct specifications. .....

- Always use the thermostat or thermal fuse specified in the service manual or other related brochure when replacing them. Using a piece of wire, for example, could lead to fire or other serious accident. .....

- When the service manual or other serious brochure specifies a distance or gap for installation of a part, always use the correct scale and measure carefully. .....

- Always check that the copier is correctly connected to an outlet with a ground connection. .....

- Check that the power cable covering is free of damage. Check that the power plug is dust-free. If it is dirty, clean it to remove the risk of fire or electric shock.
- Never attempt to disassemble the optical unit in machines using lasers. Leaking laser light may damage eyesight.
- Handle the charger sections with care. They are charged to high potentials and may cause electric shock if handled improperly.

⚠CAUTION

- Wear safe clothing. If wearing loose clothing or accessories such as ties, make sure they are safely secured so they will not be caught in rotating sections.
- Use utmost caution when working on a powered machine. Keep away from chains and belts.
- Handle the fixing section with care to avoid burns as it can be extremely hot.
- Check that the fixing unit thermistor, heat and press rollers are clean. Dirt on them can cause abnormally high temperatures.
- Do not remove the ozone filter, if any, from the copier except for routine replacement.
- Do not pull on the AC power cord or connector wires on high-voltage components when removing them; always hold the plug itself.
- Do not route the power cable where it may be stood on or trapped. If necessary, protect it with a cable cover or other appropriate item.
- Treat the ends of the wire carefully when installing a new charger wire to avoid electric leaks.
- Remove toner completely from electronic components.
- Run wire harnesses carefully so that wires will not be trapped or damaged.

- After maintenance, always check that all the parts, screws, connectors and wires that were removed, have been refitted correctly. Special attention should be paid to any forgotten connector, trapped wire and missing screws. .....

- Check that all the caution labels that should be present on the machine according to the instruction handbook are clean and not peeling. Replace with new ones if necessary. .....

- Handle greases and solvents with care by following the instructions below: .....
  - Use only a small amount of solvent at a time, being careful not to spill. Wipe spills off completely.
  - Ventilate the room well while using grease or solvents.
  - Allow applied solvents to evaporate completely before refitting the covers or turning the main switch on.
  - Always wash hands afterwards.

- Never dispose of toner or toner bottles in fire. Toner may cause sparks when exposed directly to fire in a furnace, etc. .....

- Should smoke be seen coming from the copier, remove the power plug from the wall outlet immediately. .....

3. Miscellaneous

⚠WARNING

- Never attempt to heat the drum or expose it to any organic solvents such as alcohol, other than the specified refiner; it may generate toxic gas. .....

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I

THEORY AND CONSTRUCTION SECTION

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1-1 Specifications

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1-1-1 Specifications

Original feed system	Automatic feed
Originals	Sheets
Original weights	Single-sided original mode: 35 – 160 g/m^2 Double-sided original mode: 50 – 120 g/m^2
Original paper	Plain paper, thermal paper, art paper, colored paper
Original sizes	A3 – A5R, folio/11" x 17" – 5$^1/_2$" x 8$^1/_2$"R
No. of originals	Up to 50 sheets (A3, B4, folio, 11" x 17", 8$^1/_2$" x 14") Up to 70 sheets (up to A4/11" x 8$^1/_2$") *Up to 50 sheets in the auto selection mode* Art or thermal paper must be fed individually.
Power source	Electrically connected to the copier
Machine dimensions	553 (W) x 478 (D) x 121 (H) mm 21$^3/_4$" (W) x 18$^{13}/_{16}$" (D) x 4$^3/_4$" (H)
Weight	Approx. 10.5 kg/23.1 lbs

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1-2-1 Part names and their functions

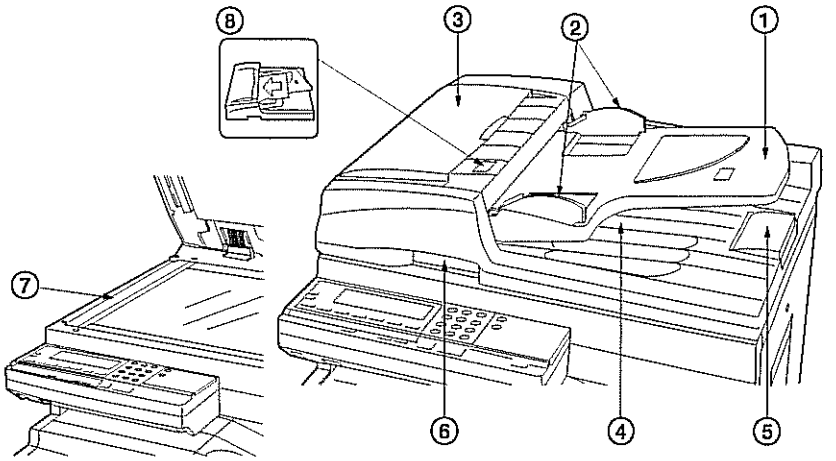


Figure 1-2-1

① Original table
② Original insert guides
③ Left cover
④ Top cover
⑤ Eject guide
⑥ SRDF open lever
⑦ Slit glass
⑧ Original set indicator

1-2-2 Machine cross section

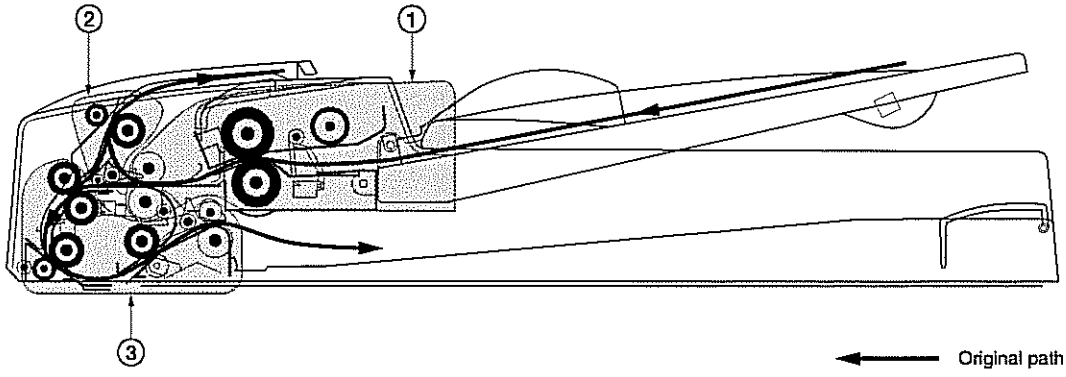
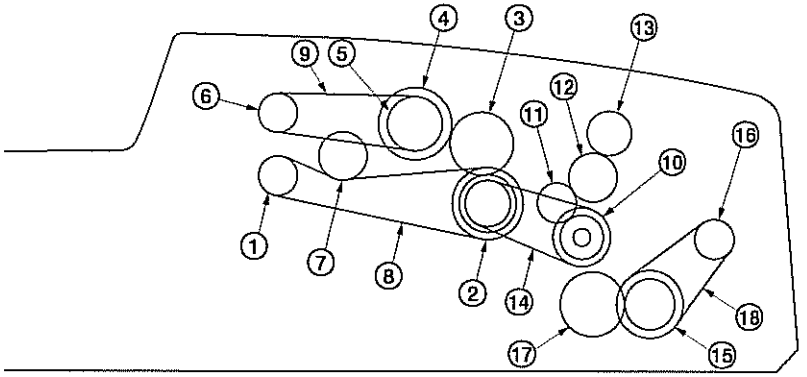


Figure 1-2-2

① Original feed section (page 1-2-5)
② Original switchback section (page 1-2-8)
③ Original conveying section (page 1-2-11)

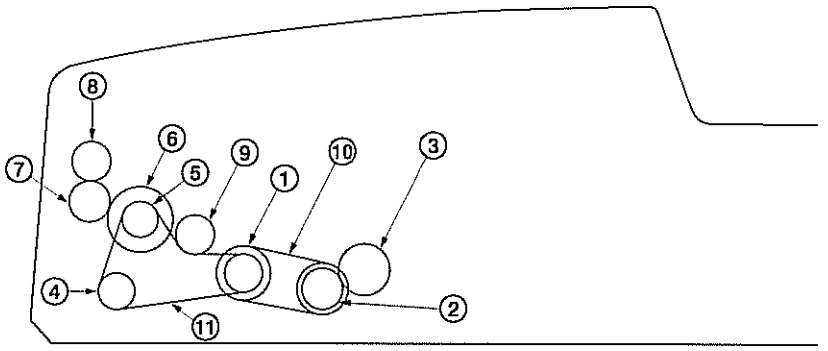
1-2-3 Drive system



(As viewed from machine rear)

Figure 1-2-3 Drive system (inside rear of machine)

① Original feed motor pulley
② Pulley 35/22/22
③ Idle gear 26
④ Original feed clutch gear
⑤ DF original feed pulley 28
⑥ DF forwarding pulley 20
⑦ Tension pulley
⑧ Original feed drive belt
⑨ DF forwarding belt
⑩ DF registration pulley 28/18
⑪ Idle gear 15
⑫ Idle gear 20
⑬ Switchback gear 18
⑭ DF registration drive belt
⑮ Gear 22/35
⑯ Original conveying motor pulley
⑰ Gear 28
⑱ Original conveying drive belt 1



(As viewed from machine front)

Figure 1-2-4 Drive system (Inside front of machine)

① Lower original conveying pulley 25/18
② Gear 18/25
③ Eject gear 18
④ Middle original conveying pulley 18
⑤ Upper original conveying pulley 18
⑥ JAM release gear 24
⑦ Joint gear 14
⑧ JAM release gear 14
⑨ Tension pulley
⑩ Eject drive belt
⑪ Conveying drive belt 2

1-2-4 Mechanical construction

(1) Original feed section

The original feed section consists of the parts shown in Figure 1-2-5. An original placed on the original table is conveyed to the original switchback section or the original conveying section.

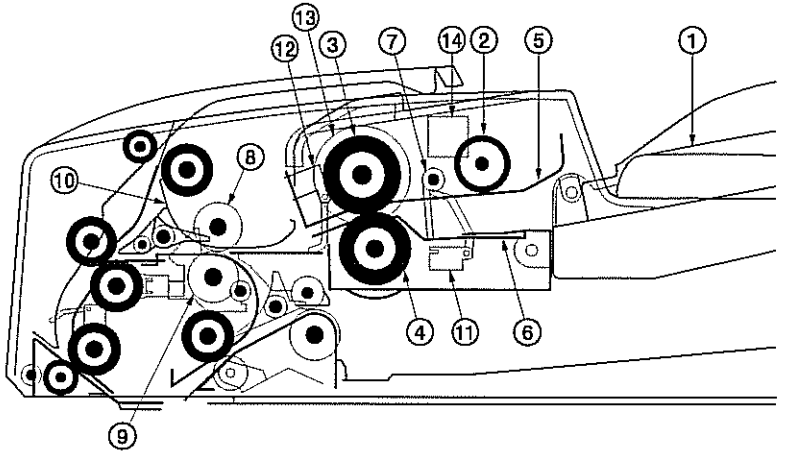


Figure 1-2-5 Original feed section

① Original table
② DF forwarding pulleys
③ DF original feed pulley
④ DF separation pulley
⑤ DF original feed upper guide
⑥ DF original feed lower guide
⑦ Original stopper
⑧ DF registration pulley
⑨ DF registration roller
⑩ DF registration guide
⑪ Original set switch (OSSW)
⑫ Original feed switch (OFSW)
⑬ Original feed clutch (OFCL)
⑭ Original feed solenoid (OFSOL)

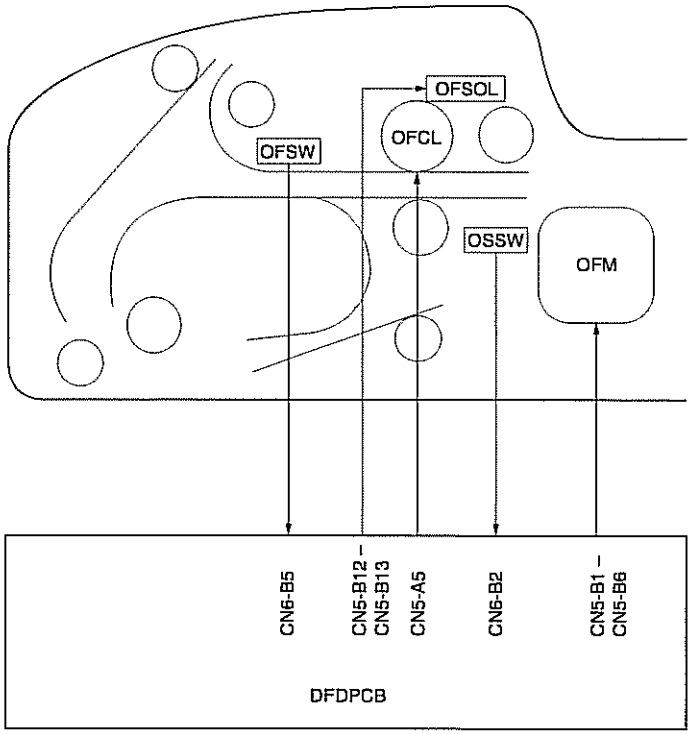
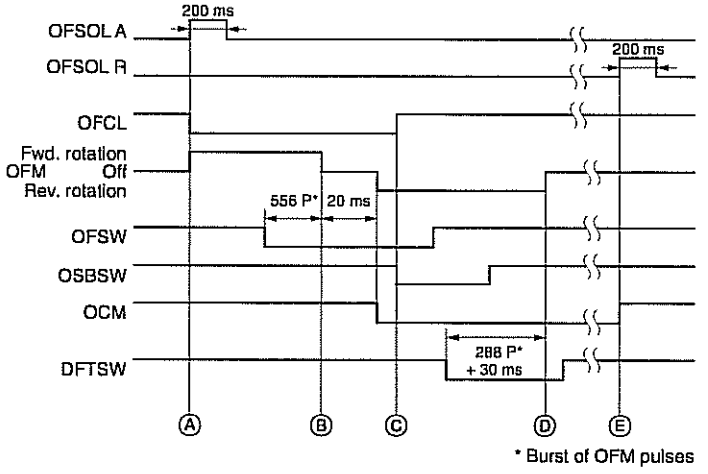


Figure 1-2-6 Original feed section block diagram

Original feed timing



Timing chart 1-2-1 Original feed (in double-sided original mode)

Ⓐ The OFSOL A signal turns on for 200 ms and then the original feed solenoid (OFSOL) turns on, lowering the DF forwarding pulleys and releasing the original stopper to convey the original forward. The original feed clutch (OFCL) simultaneously turns on, rotating the DF original feed pulley to start primary original feed. The original feed motor (OFM) rotates forward during this operation.

Ⓑ 556 OFM pulses after the leading edge of the original turns the original feed switch (OFSW) on, the original feed motor (OFM) turns off. 20 ms later, the rotation of the motor switches to the reverse direction and secondary original feed is performed by rotation of the DF registration roller.

Ⓒ When the leading edge of the original turns the original switchback switch (OSBSW) on, the original feed clutch (OFCL) turns off.

Ⓓ 288 OFM pulses plus 30 ms after the leading edge of the original turns the DF timing switch (DFTSW) on, the original feed motor (OFM) turns off.

Ⓔ After ejection of the original, as the original conveying motor (OCM) turns off, the OFSOL R signal turns on for 200 ms and the original feed solenoid (OFSOL) turns off.

(2) Original switchback section

The original switchback section consists of the parts shown in Figure 1-2-7. The original from the original feed section or original conveying section is reversed and conveyed to the original conveying section.

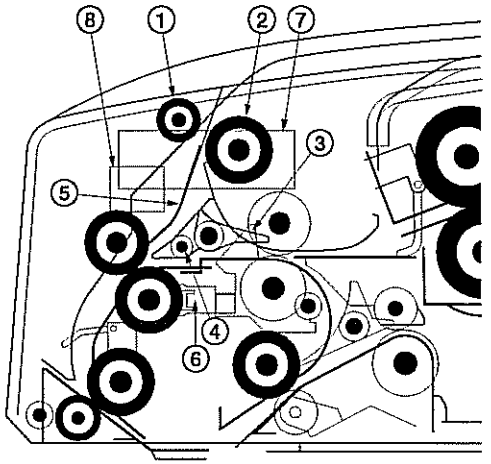


Figure 1-2-7 Original switchback section

① Switchback pulley
② Switchback roller
③ Switchback feedshift guide
④ Left switchback guide
⑤ Switchback guide
⑥ Original switchback switch (OSBSW)
⑦ Switchback feedshift solenoid (SBFSSOL)
⑧ Switchback pressure solenoid (SBPSOL)

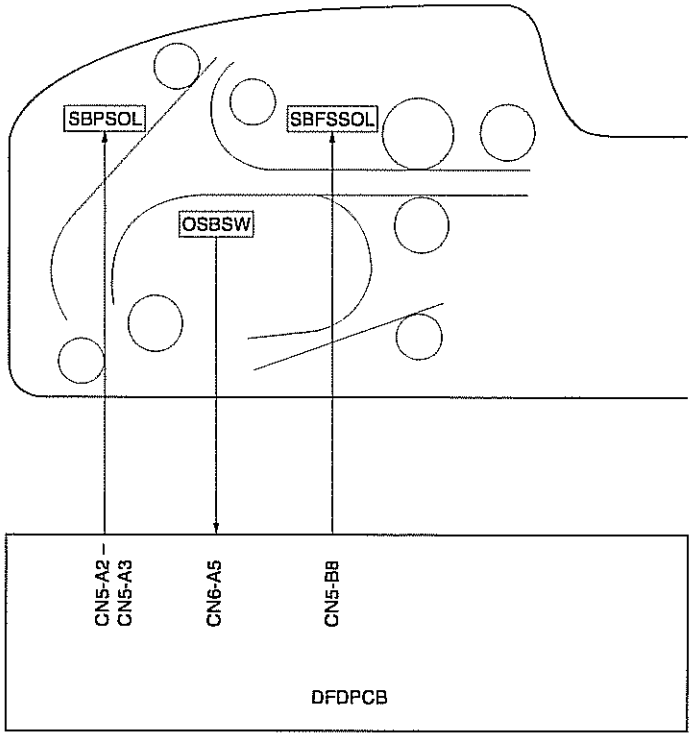


Figure 1-2-8 Original switchback section block diagram

Operation of original switchback

In the double-sided original mode, the switchback feedshift solenoid (SBFSSOL) turns on, changing the position of the switchback feedshift guide. This switches the path of the original to the original switchback section to where the original is fed.
The switchback feedshift solenoid (SBFSSOL) then turns off, allowing the switchback feedshift guide to return to the original position by which the path of the original is switched back to the original conveying section. The now reversed original is carried to the original conveying section and the switchback pressure solenoid (SBPSOL) turns off, releasing the switchback pulley to prevent an original jam in the original switchback section.

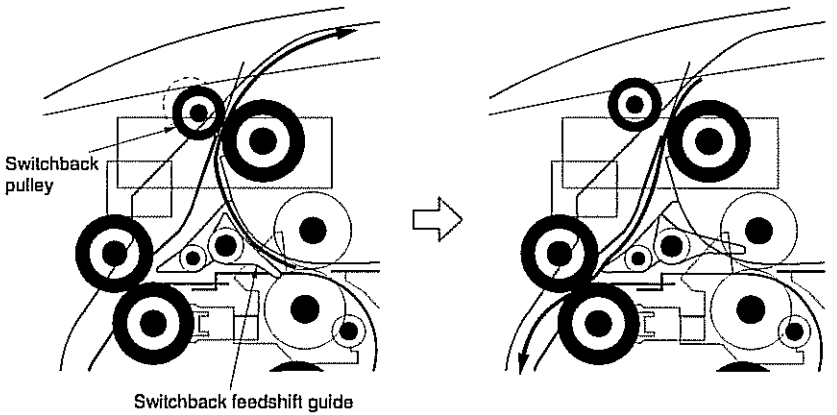


Figure 1-2-9

(3) Original conveying section

The original conveying section consists of the parts shown in Figure 1-2-10. Synchronized with the copier scanning operation, the original is conveyed across the slit glass and ejected when scanning is complete.

In the double-sided original mode, the eject feedshift solenoid (EFSSOL) turns on, moving the eject feedshift guide to switch the path of the original. When the scanning of the first face (reverse face) of the original is complete, the original is conveyed to the original switchback section again.

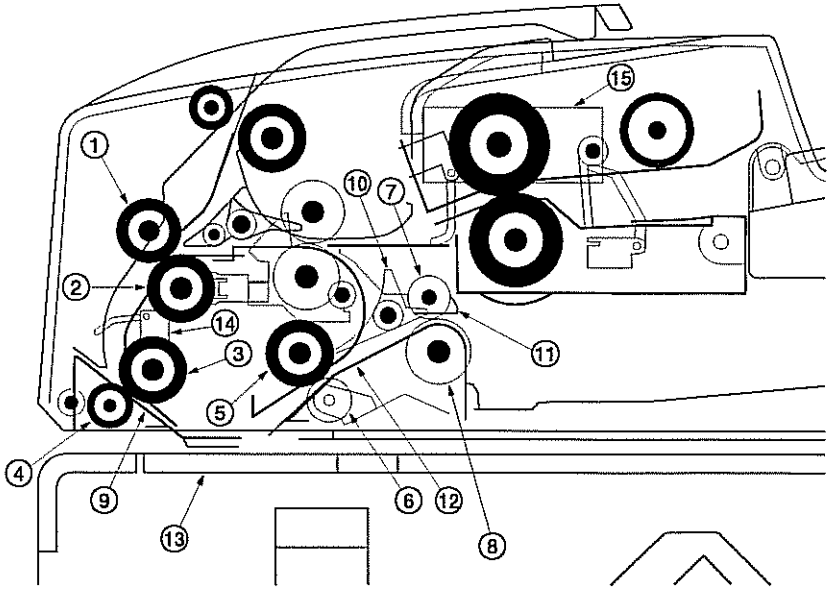


Figure 1-2-10 Original conveying section

① Upper original conveying pulley
② Upper original conveying roller
③ Lower original conveying roller
④ Front scanning pulley
⑤ Middle original conveying roller
⑥ Middle original conveying pulley
⑦ Eject pulley
⑧ Eject roller
⑨ Original conveying guide
⑩ Eject feedshift guide
⑪ Upper eject guide
⑫ Lower eject guide
⑬ Slit glass (copier)
⑭ DF timing switch (DFTSW)
⑮ Eject feedshift solenoid (EFSSOL)

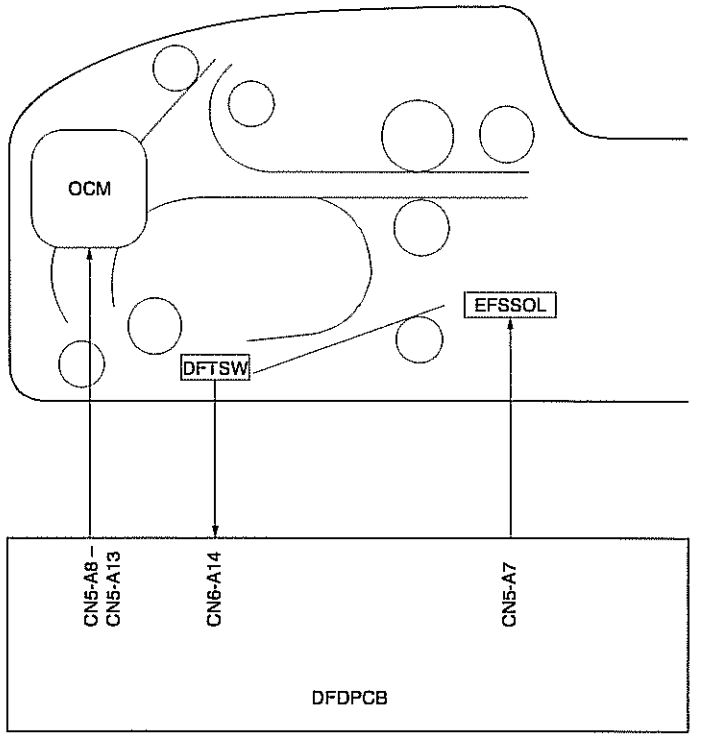
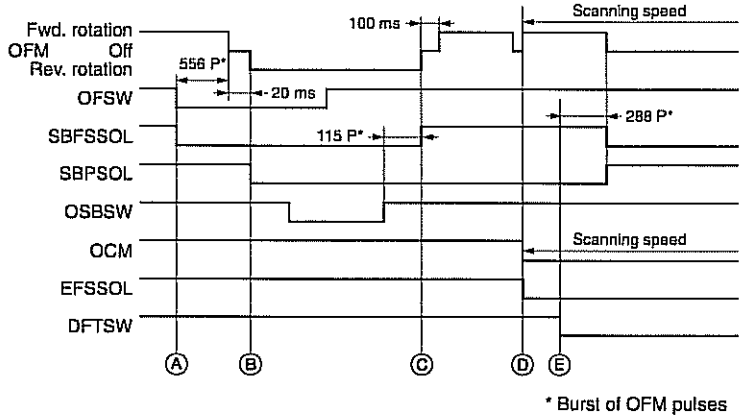


Figure 1-2-11 Original conveying section block diagram

Original switchback/conveying timing



Timing chart 1-2-2 Reversing the first face of the original

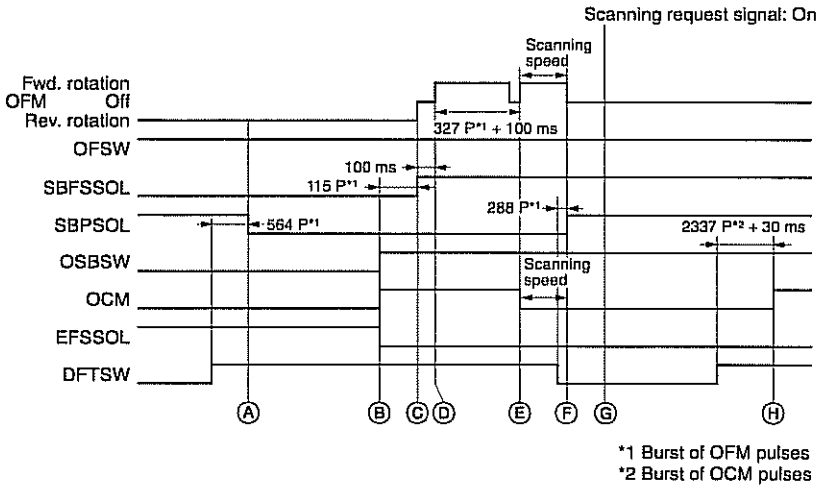
Ⓐ During primary original feed, when the original feed switch (OFSW) turns on, the switchback feedshift solenoid (SBFSSOL) also turns on, changing the position of the switchback feedshift guide. This switches the path of the original to the original switchback section.

Ⓑ 556 OFM pulses plus 20 ms after the original feed switch (OFSW) turns on, the rotation of the original feed motor (OFM) switches to the reverse direction and the original is conveyed to the switchback section by the rotation of the switchback roller. The switchback pressure solenoid (SBPSOL) simultaneously turns on to operate the switchback pulley.

Ⓒ 115 OFM pulses after the trailing edge of the original turns the original switchback switch (OSBSW) off, the switchback feedshift solenoid (SBFSSOL) turns off, the switchback feedshift guide returns to the original position and the original feed motor (OFM) turns off simultaneously. 100 ms later, the original feed motor (OFM) rotates forward, switching the rotational direction of the switchback roller. The original in the original switchback section is then reversed and conveyed to the original conveying section.

Ⓓ Simultaneously as the original feed motor (OFM) starts rotating forward, the original conveying motor (OCM) turns on to convey the original onto the slit glass. The eject feedshift solenoid (EFSSOL) simultaneously turns on, changing the position of the eject feedshift guide. This switches the path of the original to the original switchback section.

Ⓔ When the original is conveyed onto the slit glass, the DF timing switch (DFTSW) turns on. 288 OFM pulses later, the switchback pressure solenoid (SBPSOL) and the original feed motor (OFM) turn off simultaneously.



Timing chart 1-2-3 Reversing of the second face of the original and ejection

Ⓐ 564 OFM pulses after the scanning of the first face (reverse face) of the original completes and the DF timing switch (DFTSW) turns off, the switchback pressure solenoid (SBPSOL) turns on, operationg the switchback pulley.

Ⓑ When the trailing edge of the original turns the original switchback switch (OSBSW) off, the eject feedshift solenoid (EFSSOL) turns off and the eject feedshift guide returns to the original position, switching the path of the original to the eject section. Simultaneously, the original conveying motor (OCM) turns off.

Ⓒ 115 OFM pulses after the original switchback switch (OSBSW) turns off, the switchback feedshift solenoid (SBFSSOL) turns off and the switchback feedshift guide returns to the original position. Simultaneously, the original feed motor (OFM) turns off.

Ⓓ 100 ms after the original feed motor (OFM) turns off, the motor starts rotating forward, switching the rotational direction of the switchback roller. The original in the original switchback section is then reversed and conveyed to the original conveying section.

Ⓔ 327 OFM pulses plus 100 ms after the original feed motor (OFM) starts rotating forward, the motor starts rotating forward again and the original conveying motor (OCM) turns on simultaneously, conveying the original onto the slit glass.

Ⓕ 288 OFM pulses after the original is conveyed onto the slit glass and the DF timing switch (DFTSW) turns on, the switchback pressure solenoid (SBPSOL) turns off. Simultaneously, the original feed motor (OFM) turns off.

Ⓖ When the scanning request signal turns on, scanning of the second face (front face) of the original starts.

Ⓗ 2337 OCM pulses plus 30 ms after scanning of the second face (front face) of the original completes and the DF timing switch (DFTSW) turns off, the original conveying motor (OCM) turns off, completing the ejection of the original.

II

ELECTRICAL SECTION

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2-1 Electrical Parts Layout

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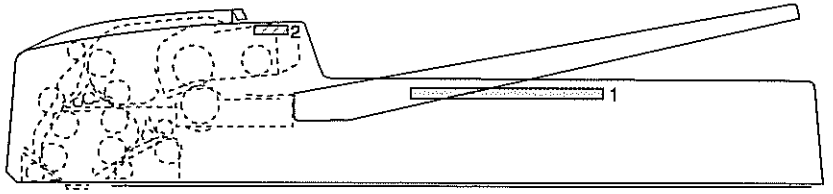
2-1-1 Electrical parts layout



Machine front Machine inside Machine rear

Figure 2-1-1 PCBs

1. DF driver PCB (DFDPCB) ..... Controls electrical components of SRDF.
2. Original set LED PCB (OSLEDPCB) ..... Indicates presence of originals on the SRDF or an original jam.

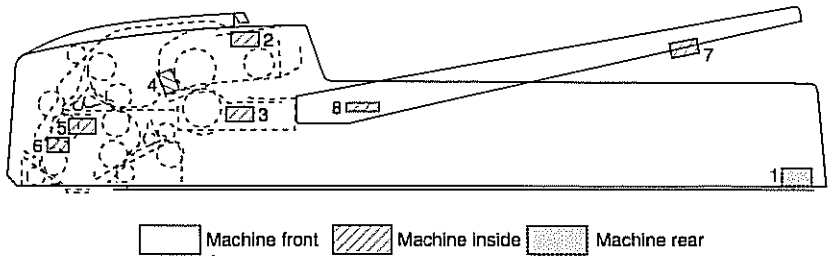


Figure 2-1-2 Switches and sensors

1. DF safety switch 1 (DFSSW1) ..... Breaks the safety circuit when the SRDF is opened; resets original jam detection.
2. DF safety switch 2 (DFSSW2) ..... Breaks the safety circuit when the left cover is opened; resets original jam detection.
3. Original set switch (OSSW) ..... Detects the presence of an original.
4. Original feed switch (OFSW) ..... Detects primary original feed end timing.
5. Original switchback switch (OSBSW) ..... Detects a paper jam in the original switchback section.
6. DF timing switch (DFTSW) ..... Detects the original scanning timing.
7. Original size length switch (OSLSW) ..... Detects the length of the original.
8. Original size width switch (OSWSW) ..... Detects the width of the original.

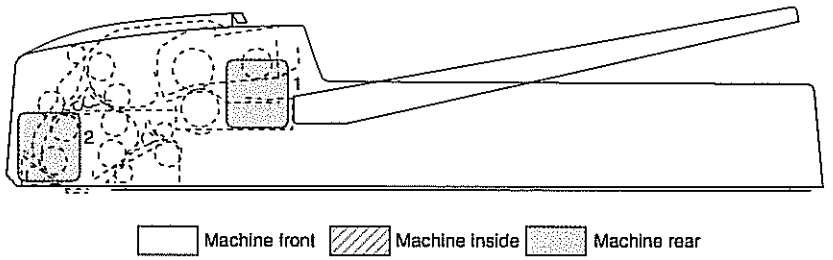


Figure 2-1-3 Motors

1. Original feed motor (OFM) ..... Drives the original feed and switchback sections.
2. Original conveying motor (OCM) ..... Drives the original conveying section.

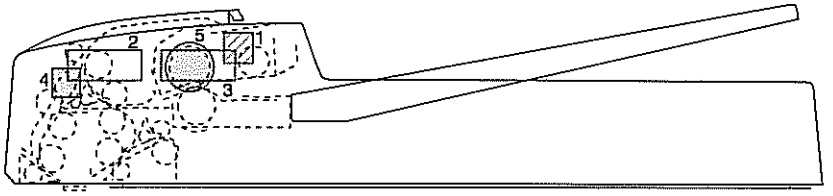


Figure 2-1-4 Clutches and solenoids

1. Original feed solenoid (OFSOL) ..... Moves the DF forwarding pulleys vertically.
2. Switchback feedshift solenoid (SBFSSOL) ..... Moves the switchback feedshift guide.
3. Eject feedshift solenoid (EFSSOL) ..... Moves the eject feedshift guide.
4. Switchback pressure solenoid (SBPSOL) ..... Moves the switchback pulley.
5. Original feed clutch (OFCL) ..... Controls the drive of the DF original feed pulley.

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2-2-1 Original misfeed detection

When an original jams, the machine immediately stops operation and a message is shown on the copier operation panel. The SRDF original set indicator also flashes red.
To remove the jammed original, open the SRDF or the left cover.
To reset the original misfeed detection, open and close the SRDF or left cover to turn DF safety switch 1 or 2 off and on.

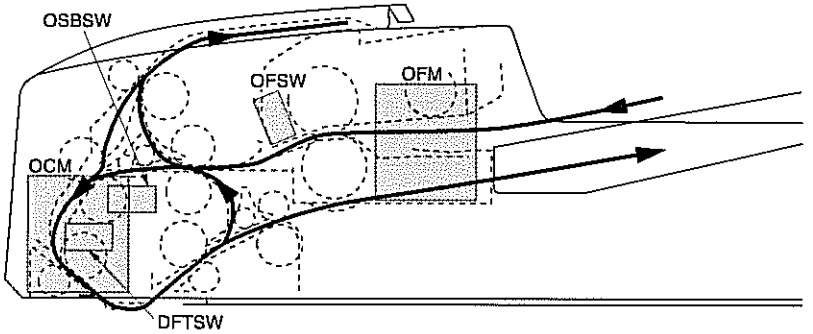


Figure 2-2-1 Original misfeed detection

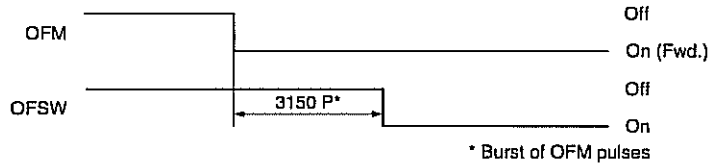
2-2-2 Original misfeed detection conditions

(1) Initial movement confirmation JAM

- When the DF START signal is received, switches other than the original set switch (OSSW) and the original size length switch (OSLSW) on the original table are on.

(2) No paper feed

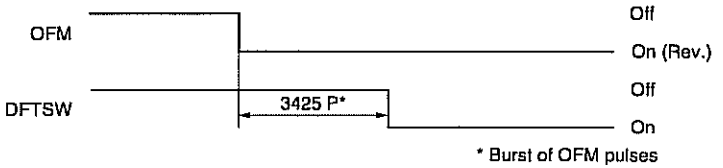
- During the primary feed of the second or later original in the single-sided or double-sided original mode, the original feed switch (OFSW) does not turn on within 3150 original feed motor (OFM) pulses from the start of forward rotation of the original feed motor (OFM).



Timing chart 2-2-1

(3) An original jam in the original feed section

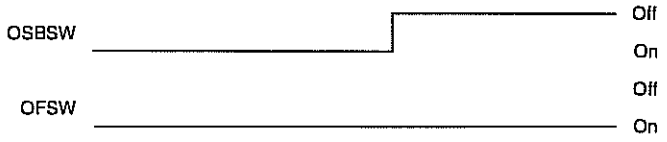
- During the secondary original feed in the single-sided original mode, the DF timing switch (DFTSW) does not turn on within 3425 original feed motor (OFM) pulses from the start of reverse rotation of the original feed motor (OFM). Alternatively, during continuous original feed in the single-sided original mode, the DF timing switch (DFTSW) does not turn on for the second time under the above conditions.



Timing chart 2-2-2

- During the secondary original feed in the single-sided original mode, the original feed switch (OFSW) has not turned off before the DF timing switch (DFTSW) turns off.

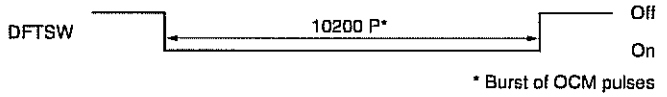
• During original switchback operation in the double-sided original mode, the original feed switch (OFSW) remains on when the original switchback switch (OSBSW) turns off.



Timing chart 2-2-3

(4) An original jam in the original conveying section

• During the secondary original feed in the single-sided or double-sided original mode, the DF timing switch (DFTSW) does not turn on within 10200 original conveying motor (OCM) pulses from the DF timing switch (DFTSW) turning on.

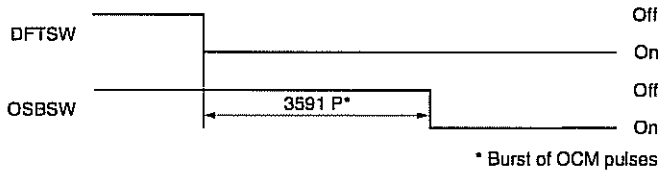


Timing chart 2-2-4

• In the single-sided or double-sided original mode, the DF timing switch (DFTSW) turns off within 2016 original conveying motor (OCM) pulses from the DF timing switch (DFTSW) turning on.

Timing chart 2-2-5

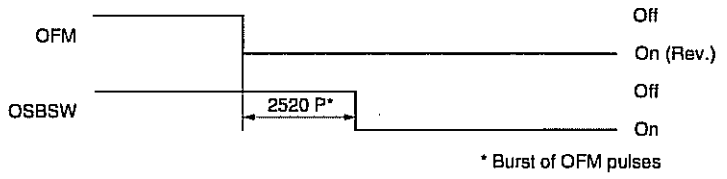
• While scanning the first face (reverse face) of an original in the double-sided original mode, the original switchback switch (OSBSW) does not turn on within 3591 original conveying motor (OCM) pulses from the DF timing switch (DFTSW) turning on.



Timing chart 2-2-6

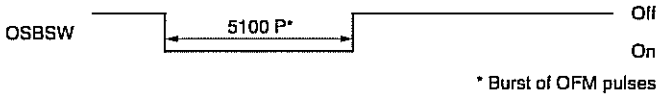
(5) An original jam in the original switchback section

- During the switchback operation of an original in the double-sided original mode, the original switchback switch (OSBSW) does not turn on within 2520 original feed motor (OFM) pulses from the start of reverse rotation of the original feed motor (OFM).



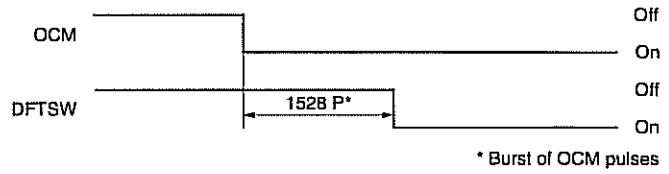
Timing chart 2-2-7

- During switchback operation of an original in the double-sided original mode, the original switchback switch (OSBSW) does not turn off within 5100 original feed motor (OFM) pulses from the original switchback switch (OSBSW) turning on.



Timing chart 2-2-8

- During the secondary original feed in the double-sided original mode, the DF timing switch (DFTSW) does not turn on within 1528 original conveying motor (OCM) pulses from the original conveying motor (OCM) turning on.



Timing chart 2-2-9

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2-3-1 DF driver PCB

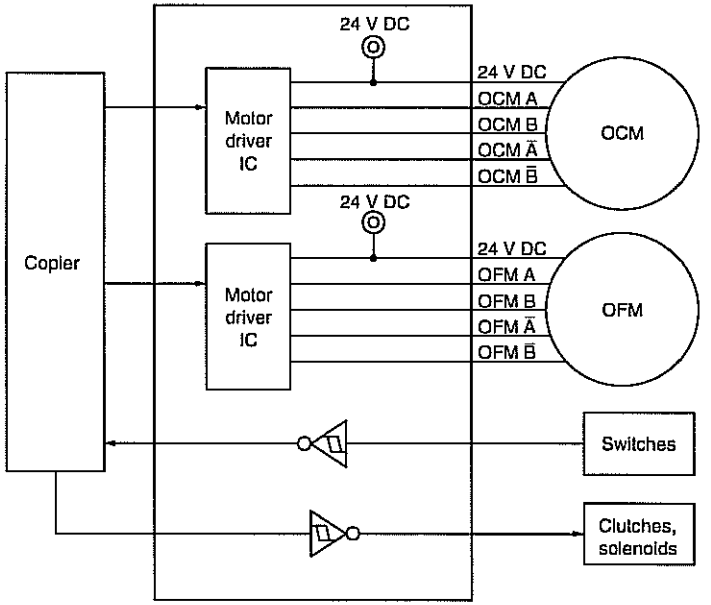

Figure 2-3-1 DF driver PCB block diagram

The DF driver PCB consists of the motor driver ICs. It mainly drives the original feed motor (OFM) and original conveying motor (OCM) in response to control signals from the copier. It also drives and routes the input and output signals and routes the 24 V DC supply to clutches and solenoids in the SRDF and the 5 V DC supply to switches.

III

SET UP AND ADJUSTMENT SECTION

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3-1-1 Unpacking and installation

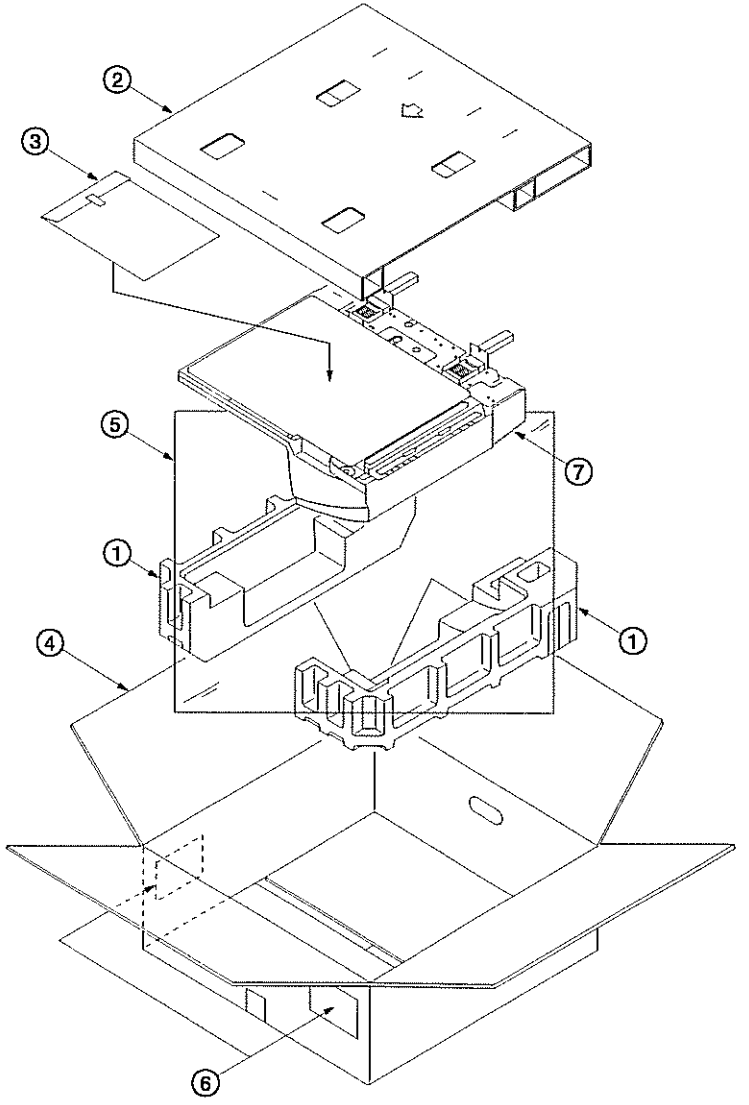

Figure 3-1-1

① Bottom pads
② Top pad
③ Plastic bag
- Installation manual
- Instruction handbook

④ Outer case
⑤ Machine cover
⑥ Bar-code labels
⑦ SRDF

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3-2-1 Precautions for assembly and disassembly

(1) Precautions

- Be sure to turn the main switch off and disconnect the power plug before starting disassembly.

3-2-2 Procedure for assembly and disassembly

(1) Detaching and refitting the DF original feed pulley and the DF forwarding pulleys

Clean or replace the DF original feed pulley and the DF forwarding pulleys as follows.

Procedure

1. Open the left cover.
2. Remove the upper original feed section cover (two screws).
3. Remove the two stop rings and then the original feed pulley assembly by sliding out the bushings.

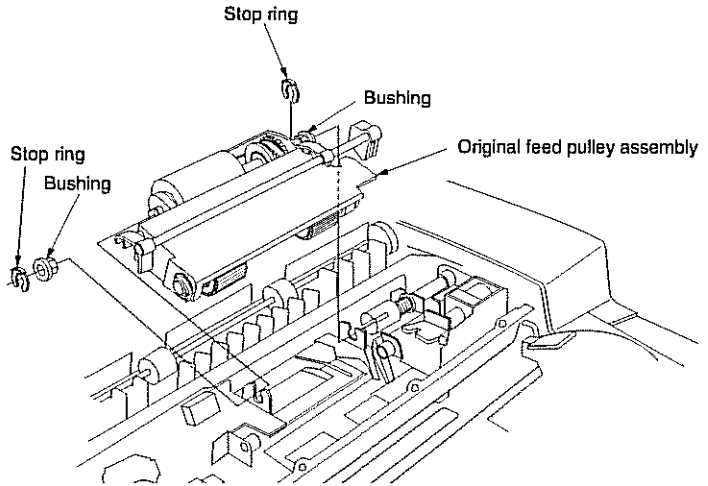


Figure 3-2-1

- **Detaching the DF original feed pulley**

4. Remove the two stop rings and then the DF original feed pulley from the original feed front shaft.

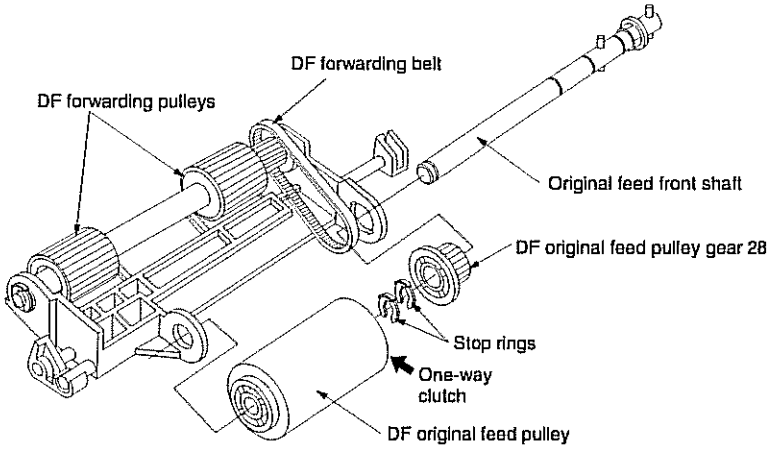


Figure 3-2-2 Detaching the DF original feed pulley

- **Detaching the DF forwarding pulleys**

5. Remove the stop ring and the DF forwarding belt on the DF forwarding pulley 20, and then remove the DF forwarding pulleys from the forwarding shaft.
6. Clean or replace the DF original feed pulley and the DF forwarding pulleys.
7. Refit all removed parts.
   - When fitting the DF original feed pulley and the DF forwarding pulleys, ensure that the side having the one-way clutch faces the machine rear.

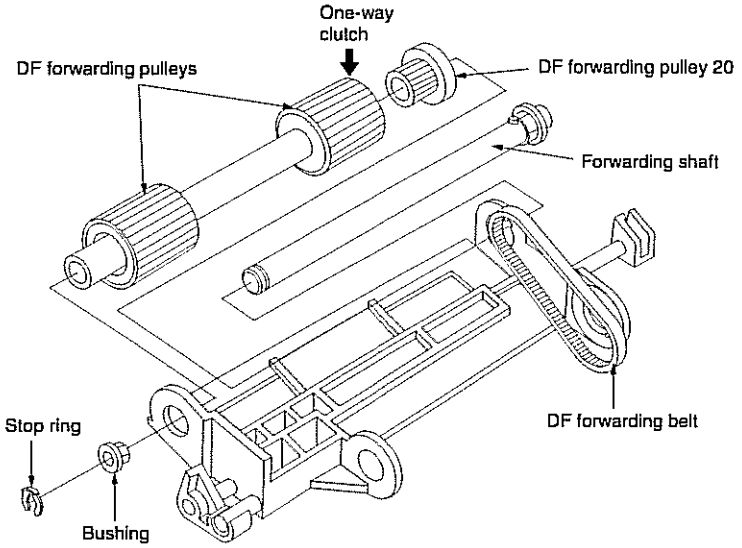


Figure 3-2-3 Detaching the DF forwarding pulleys

(2) Detaching and refitting the DF separation pulley

Clean or replace the DF separation pulley as follows.

Procedure

1. Open the left cover.
2. Remove the upper original feed section cover (two screws).
3. Remove the rear cover (two screws).
4. Remove the fulcrum pin (one screw) and detach the 6-pin connector at the machine rear to remove the original table.

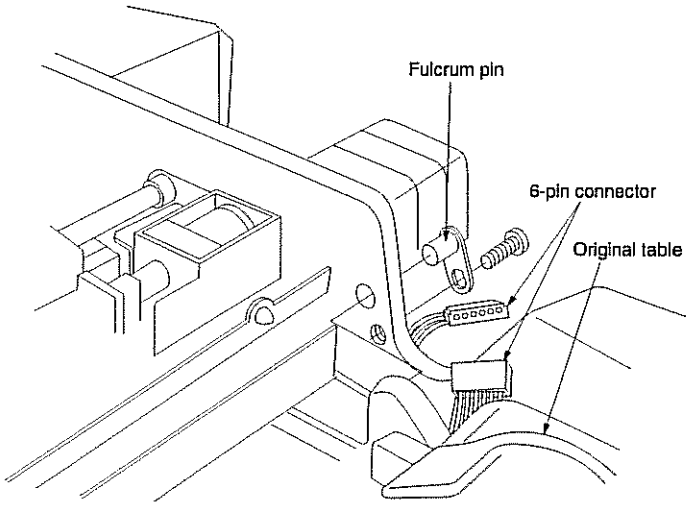


Figure 3-2-4

5. Remove the two screws securing the DF original feed lower guide and the two screws securing the DF original feed upper guide.
6. Loosen the other two screws on the DF original feed lower guide. While lifting the DF original feed upper guide and pressing the original set switch actuator, remove the DF original feed lower guide.

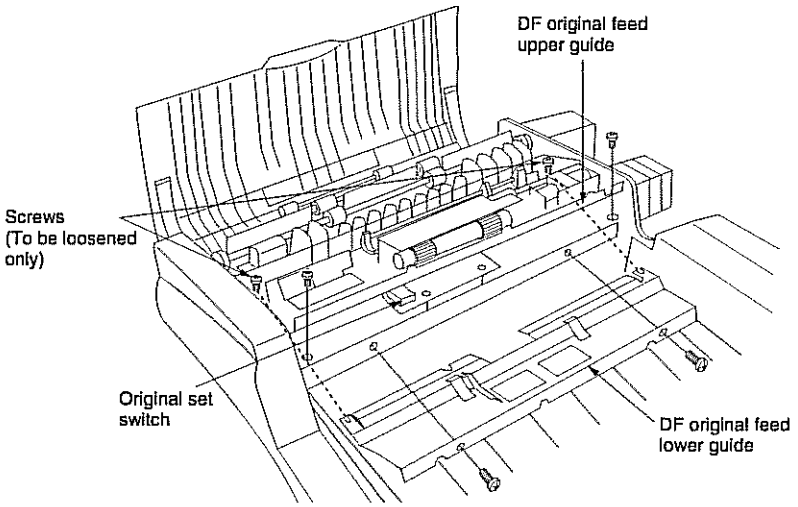


Figure 3-2-5

7. Detach the original set switch 3-pin connector and remove the two screws securing the separation pulley retainer to remove the retainer.

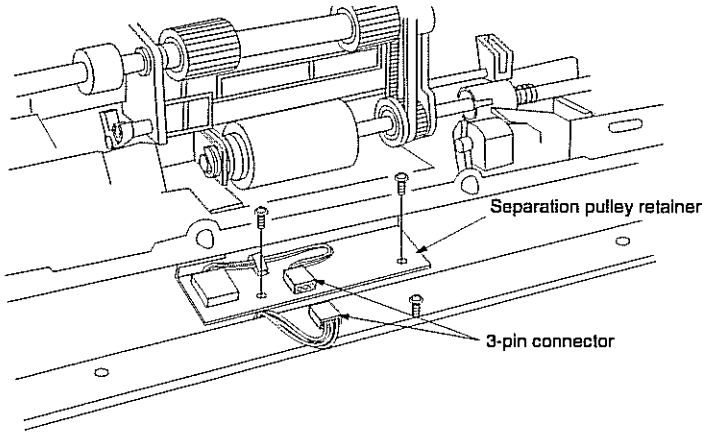


Figure 3-2-6

8. Remove the two stop rings and pin to remove the DF separation pulley from the separation shaft.
9. Clean or replace the DF separation pulley.
10. Refit all removed parts.
    - When fitting the DF separation pulley, ensure that the side having the one-way clutch faces the machine rear.

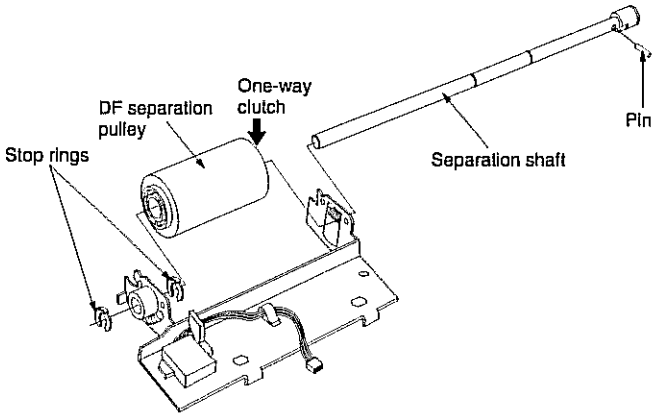


Figure 3-2-7 Detaching the DF separation pulley

(3) Adjusting the DF center line

Perform the following adjustment if there is a regular error between the centers of the original and the copy image when the SRDF is used.

Note: Use an original with a reference line drawn down the center.

Procedure

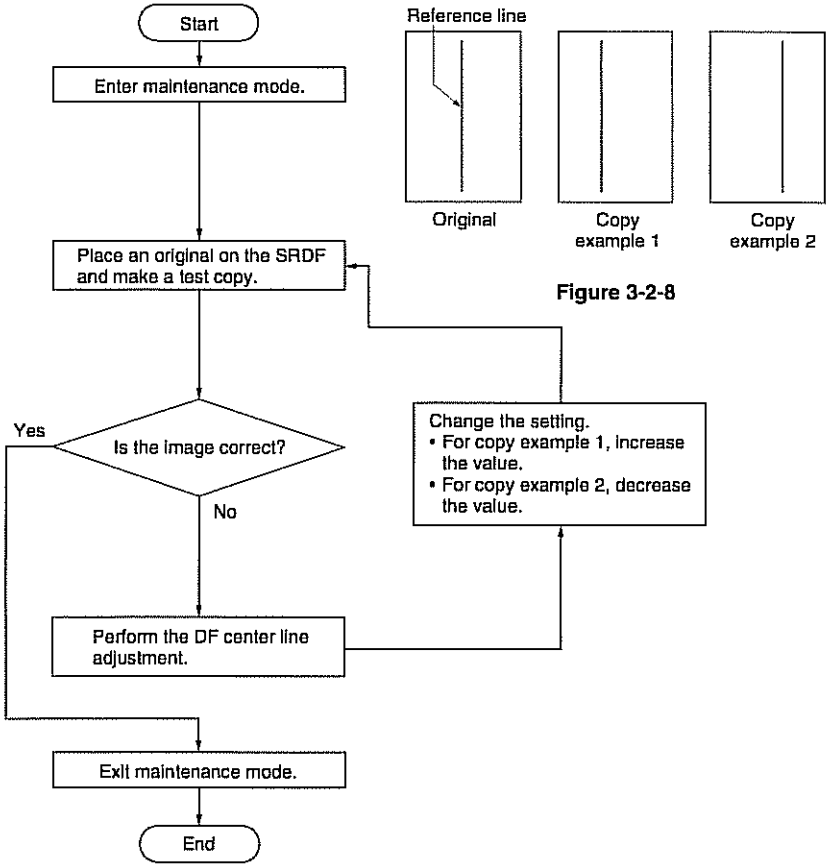

Start
Enter maintenance mode.
Place an original on the SRDF and make a test copy.
Is the image correct?
Yes
No
Change the setting.
• For copy example 1, increase the value.
• For copy example 2, decrease the value.
Perform the DF center line adjustment.
Exit maintenance mode.
End

Figure 3-2-8

(4) Adjusting the DF original scanning start position

Perform the following adjustment if there is a regular error between the leading edges of the original and the copy image when the SRDF is used.

Note: Use an original with a reference line drawn 10 mm from the leading edge.

Procedure

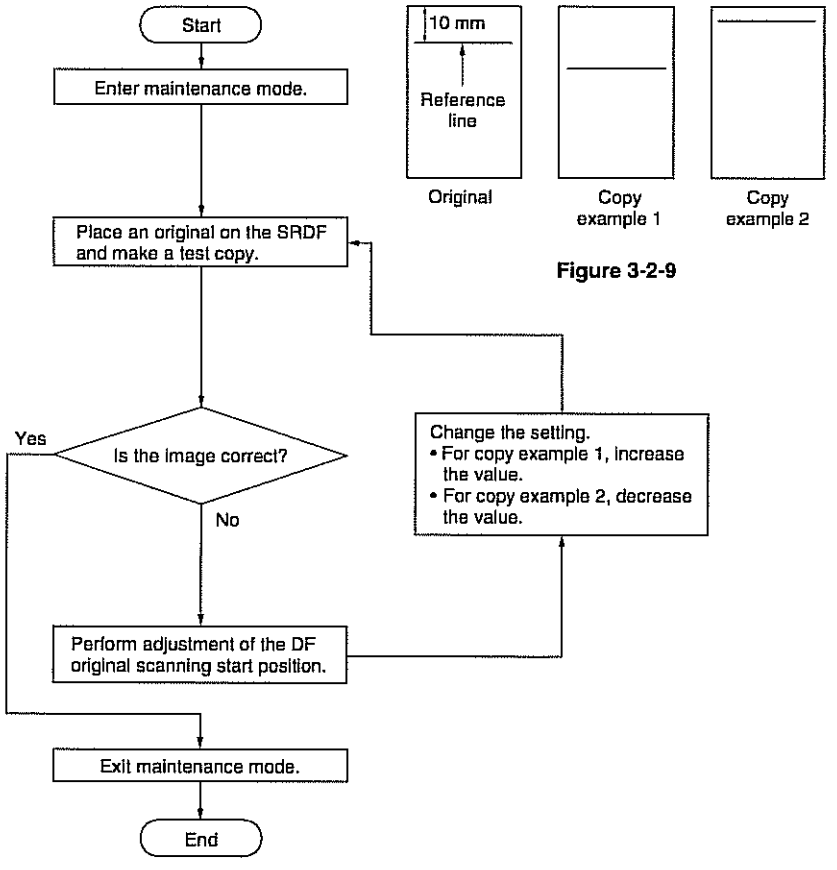
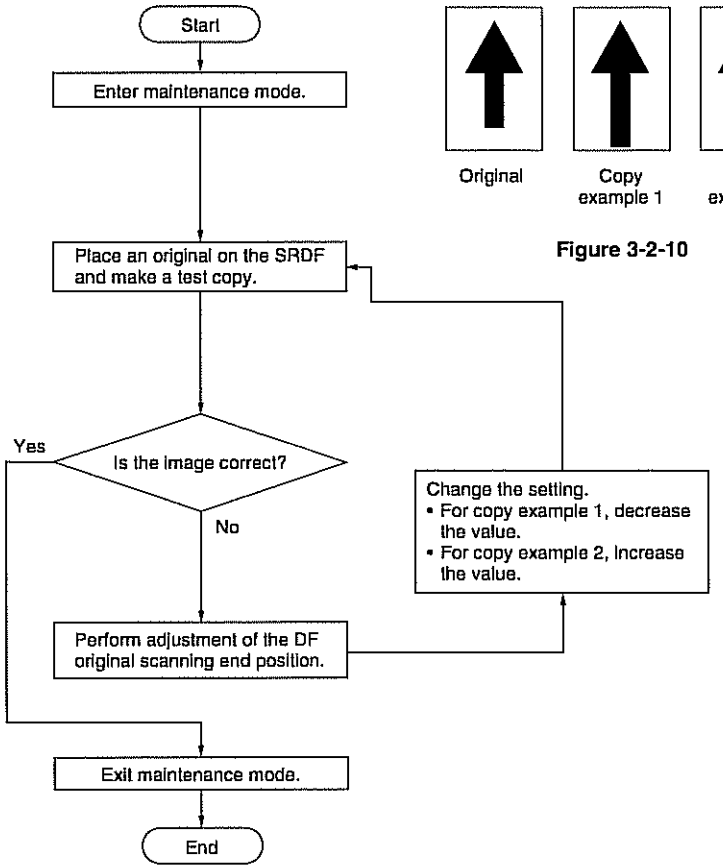

Start
Enter maintenance mode.
Place an original on the SRDF and make a test copy.
Is the image correct?
Yes
No
Change the setting.
• For copy example 1, increase the value.
• For copy example 2, decrease the value.
Perform adjustment of the DF original scanning start position.
Exit maintenance mode.
End

Figure 3-2-9

(5) Adjusting the DF original scanning end position

Perform the following adjustment if there is a regular error between the trailing edges of the original and the copy image when the SRDF is used.

Procedure


Start
Enter maintenance mode.
Place an original on the SRDF and make a test copy.
Is the image correct?
Yes
No
Change the setting.
• For copy example 1, decrease the value.
• For copy example 2, increase the value.
Perform adjustment of the DF original scanning end position.
Exit maintenance mode.
End

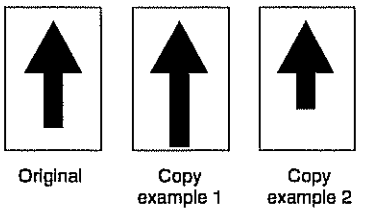
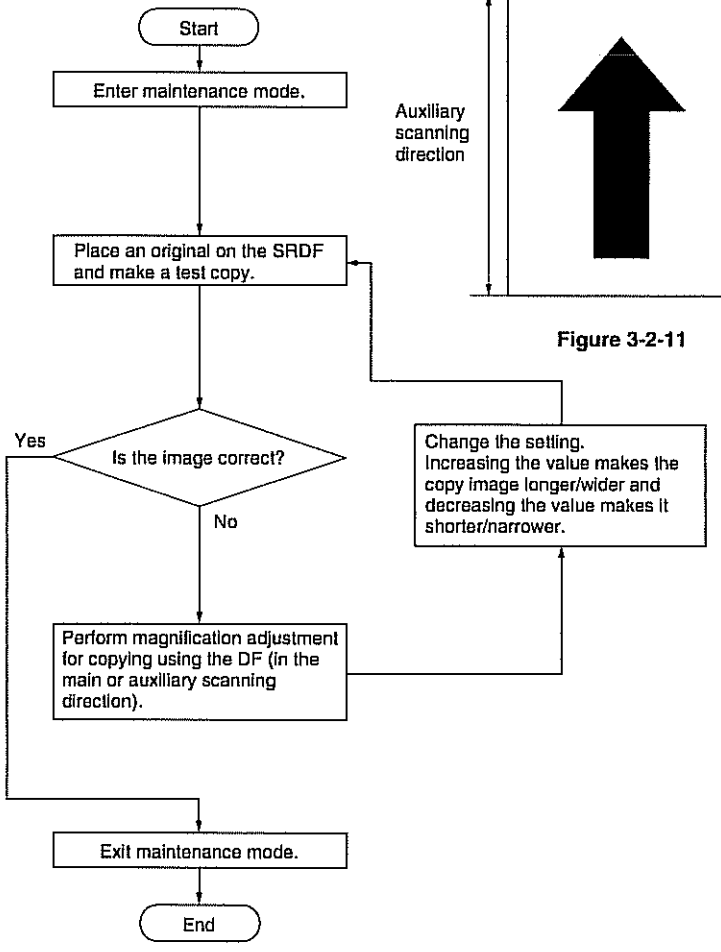


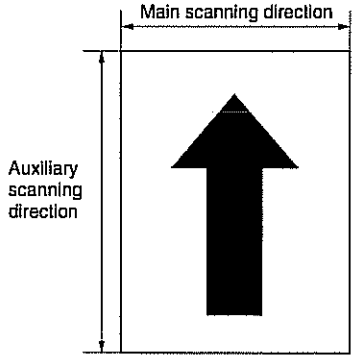
Figure 3-2-10

(6) Adjusting magnification for copying using the DF

Perform the following adjustment if magnification is incorrect when SRDF is used.

Procedure


Start
Enter maintenance mode.
Place an original on the SRDF and make a test copy.
Is the image correct?
Yes
No
Change the setting. Increasing the value makes the copy image longer/wider and decreasing the value makes it shorter/narrower.
Perform magnification adjustment for copying using the DF (in the main or auxiliary scanning direction).
Exit maintenance mode.
End



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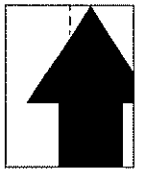
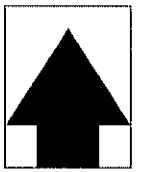
3-3-1 Image formation problems

(1) There is a regular error between the centers of the original and copy image when the SRDF is used.



See page 3-3-2.

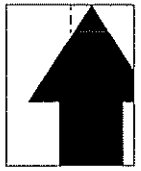
(2) There is a regular error between the leading edges of the original and copy image when the SRDF is used.



See page 3-3-2.

(1) There is a regular error between the centers of the original and copy image when the SRDF is used.

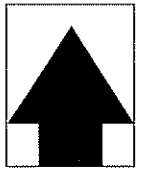
Causes
1. Misadjusted DF center line.



Causes	Check procedures/corrective measures
1. Misadjusted DF center line.	Readjust the DF center line (see page 3-2-8).

(2) There is a regular error between the leading edges of the original and copy image when the SRDF is used.

Causes
1. Misadjusted DF original scanning start position.



Causes	Check procedures/corrective measures
1. Misadjusted DF original scanning start position.	Readjust the DF original scanning start position (see page 3-2-9).

3-3-2 Original misfeeds

Problem	Causes/check procedures	Corrective measures
(1) An original jams when the main switch is turned on.	A piece of paper torn from an original is caught around the original feed switch.	Remove any found.
	Defective original feed switch.	With 5 V DC present at CN6-B4 on the DF driver PCB, check if CN6-B5 on the DF driver PCB remains low when the original feed switch is turned on and off. If it does, replace the original feed switch.
	A piece of paper torn from an original is caught around the original switchback switch.	Remove any found.
	Defective original switchback switch.	With 5 V DC present at CN6-A6 on the DF driver PCB, check if CN6-A5 on the DF driver PCB remains low when the original switchback switch is turned on and off. If it does, replace the original switchback switch.
	A piece of paper torn from an original is caught around the DF timing switch.	Remove any found.
	Defective DF timing switch.	With 5 V DC present at CN6-A15 on the DF driver PCB, check if CN6-A14 on the DF driver PCB remains low when the DF timing switch is turned on and off. If it does, replace the DF timing switch.
(2) An original jams during continuous copying of multiple originals.	Defective original feed switch.	With 5 V DC present at CN6-B4 on the DF driver PCB, check if CN6-B5 on the DF driver PCB remains low when the original feed switch is turned on and off. If it does, replace the original feed switch.
	Check if the original feed motor or the original conveying motor malfunction.	Check and remedy.

Problem	Causes/check procedures	Corrective measures
(3) An original jams in the original feed section during copying (a jam in the original feed section).	Defective DF timing switch.	With 5 V DC present at CN6-A15 on the DF driver PCB, check if CN6-A14 on the DF driver PCB remains low when the DF timing switch is turned on and off. If it does, replace the DF timing switch.
	Defective original feed switch.	With 5 V DC present at CN6-B4 on the DF driver PCB, check if CN6-B5 on the DF driver PCB remains low when the original feed switch is turned on and off. If it does, replace the original feed switch.
	Defective original switchback switch.	With 5 V DC present at CN6-A6 on the DF driver PCB, check if CN6-A5 on the DF driver PCB remains low when the original switchback switch is turned on and off. If it does, replace the original switchback switch.
	Check if the original feed motor malfunctions.	Check and remedy.
	Check if the DF original feed pulley or the DF separation pulley is deformed.	Check visually and replace the deformed pulley.
	Check if the DF registration roller or the DF registration pulley is deformed.	Check visually and replace the deformed pulley.
	Check if the lower original conveying roller or the front scanning pulley is deformed.	Check visually and replace the deformed pulley.

Problem	Causes/check procedures	Corrective measures
(4) An original jams in the original conveying section during copying (a jam in the original conveying section).	Defective DF timing switch.	With 5 V DC present at CN6-A15 on the DF driver PCB, check if CN6-A14 on the DF driver PCB remains low when the DF timing switch is turned on and off. If it does, replace the DF timing switch.
	Defective original switchback switch.	With 5 V DC present at CN6-A6 on the DF driver PCB, check if CN6-A5 on the DF driver PCB remains low when the original switchback switch is turned on and off. If it does, replace the original switchback switch.
	Check if the original conveying motor malfunctions.	Check and remedy.
	Check if the middle original conveying roller and middle original conveying pulley contact each other correctly.	Check and remedy.
(5) An original jams in the original switchback section during copying (a jam in the original switchback section).	Defective original switchback switch.	With 5 V DC present at CN6-A6 on the DF driver PCB, check if CN6-A5 on the DF driver PCB remains low when the original switchback switch is turned on and off. If it does, replace the original switchback switch.
	Defective DF timing switch.	With 5 V DC present at CN6-A15 on the DF driver PCB, check if CN6-A14 on the DF driver PCB remains low when the DF timing switch is turned on and off. If it does, replace the DF timing switch.
	Check if the original feed motor malfunctions.	Check and remedy.
	Check if the original conveying motor malfunctions.	Check and remedy.

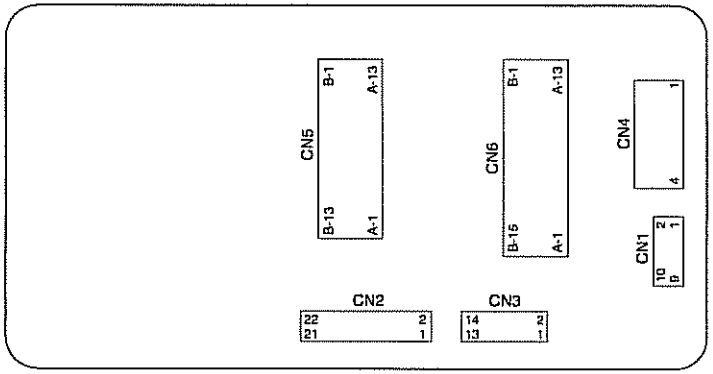
Problem	Causes/check procedures	Corrective measures
(6) Original jams frequently.	An original outside the specifications is used.	Use only originals conforming to the specifications.
	The DF forwarding pulleys, DF original feed pulley or DF switchback pulley is dirty with paper powder.	Clean with isopropyl alcohol.
	The DF original feed pulley and the DF separation pulley do not contact correctly.	Remedy.

3-3-3 PCB terminal voltages

Precautions

- When handling the circuit boards, do not touch the components with bare hands.
- ICs can be damaged by static discharges. If a PCB contains ICs, do not touch the ICs, cable connectors or edge connectors.
- Store the circuit boards wrapped in aluminum foil, conductive sponge rubber, or similar material.

(1) DF driver PCB



Terminals (CN)		Voltage	Remarks
1-1	1-3, -4	24 V DC	24 V DC supply, input
1-2	1-3, -4	24 V DC	24 V DC supply, input
1-7	1-9, -10	5 V DC	5 V DC supply, input
1-8	1-9, -10	5 V DC	5 V DC supply, input
2-1	1-9, -10	5/0 V DC	OCM control signal, input (OCM M1)
2-2	1-9, -10	5/0 V DC	OCM control signal, input (OCM M2)
2-3	1-9, -10	5/0 V DC	OCM control signal, input (OCM M3)
2-6	1-9, -10		OCM current control voltage, input (OCM Vref)
2-7	1-9, -10	5/0 V DC	OCM rotation direction switching signal, input (OCM CWB)
2-8	1-9, -10	5/0 V DC (pulse)	OCM drive clock pulse, input
2-9	1-9, -10	5/0 V DC	OCM control signal, input (OCM RET)
2-10	1-9, -10	5/0 V DC	OCM enable signal, input
2-11	1-9, -10	5/0 V DC	OFM rotation direction switching signal, input (OFM CWB)
2-12	1-9, -10	5/0 V DC (pulse)	OFM drive clock pulse, input

Terminals (CN)		Voltage	Remarks
2-13	1-9, -10	5/0 V DC	OFM control signal, input (OFM RET)
2-14	1-9, -10	5/0 V DC	OFM enable signal, input
2-15	1-9, -10	5/0 V DC	OFSOL on, input (OFSOL A)
2-16	1-9, -10	5/0 V DC	OFSOL off, input (OFSOL R)
2-17	1-9, -10	5/0 V DC	SBFSSOL off/on, input
2-19	1-9, -10	5/0 V DC	EFSSOL off/on, input
2-20	1-9, -10	5/0 V DC	OFCL off/on, input
2-21	1-9, -10	5/0 V DC	SBPSOL on, input (SBPSOL A)
2-22	1-9, -10	5/0 V DC	SBPSOL off, input (SBPSOL R)
3-1	1-9, -10	5/0 V DC	OSSW off/on, output
3-2	1-9, -10	5/0 V DC	OFSW off/on, output
3-3	1-9, -10	5/0 V DC	OSBSW off/on, output
3-4	1-9,-10	5/0 V DC	DFTSW off/on, output
3-5	1-9, -10	5/0 V DC	OSLSW off/on, output
3-6	1-9, -10	5/0 V DC	DFSSW1 off/on, output
3-7	1-9, -10	5/0 V DC	DFSSW2 off/on, output
3-8	1-9, -10		OSWSW size detection voltage, output
3-9	1-9, -10	5/0 V DC	OSLED (green) off/on, input
3-10	1-9, -10	5/0 V DC	OSLED (red) off/on, input
3-11	1-9, -10	0/5 V DC	SRDF installed/not installed detection signal
4-3	4-2	24/0 V DC	DFSSW1 off/on
4-4	4-2	24/0 V DC	DFSSW2 off/on
5-A1	1-3, -4	24/0 V DC	24 V DC supply for SBPSOL, output
5-A2	1-3, -4	24/0 V DC	SBPSOL on, output (SBPSOL A)
5-A3	1-3, -4	24/0 V DC	SBPSOL off, output (SBPSOL R)
5-A4	1-3, -4	24 V DC	24 V DC supply for OFCL, output
5-A5	1-3, -4	24/0 V DC	OFCL off/on, output
5-A6	1-3, -4	24 V DC	24 V DC supply for EFSSOL, output
5-A7	1-3, -4	24/0 V DC	EFSSOL off/on, output
5-A8	1-3, -4	24 V DC	24 V DC supply for OCM, output (A)
5-A9	1-3, -4	24 V DC	24 V DC supply for OCM, output (B)
5-A10	1-3, -4	24/0 V DC (pulse)	OCM motor coil energization pulse, output (A)
5-A11	1-3, -4	24/0 V DC (pulse)	OCM motor coil energization pulse, output (B)
5-A12	1-3, -4	24/0 V DC (pulse)	OCM motor coil energization pulse, output (_A)
5-A13	1-3, -4	24/0 V DC (pulse)	OCM motor coil energization pulse, output (_B)

Terminals (CN)		Voltage	Remarks
5-B1	1-3, -4	24 V DC	24 V DC supply for OFM, output (A)
5-B2	1-3, -4	24 V DC	24 V DC supply for OFM, output (B)
5-B3	1-3, -4	24/0 V DC (pulse)	OFM motor coil energization pulse, output (A)
5-B4	1-3, -4	24/0 V DC (pulse)	OFM motor coil energization pulse, output (B)
5-B5	1-3, -4	24/0 V DC (pulse)	OFM motor coil energization pulse, output (_A)
5-B6	1-3, -4	24/0 V DC (pulse)	OFM motor coil energization pulse, output (_B)
5-B7	1-3, -4	24 V DC	24 V DC supply for SBFSSOL, output
5-B8	1-3, -4	24/0 V DC	SBFSSOL off/on, output
5-B11	1-3, -4	24 V DC	24 V DC supply for OFSOL, output
5-B12	1-3, -4	24/0 V DC	OFSOL on, output (OFSOL A)
5-B13	1-3, -4	24/0 V DC	OFSOL off, output (OFSOL R)
6-A5	6-A4	5/0 V DC	OSBSW off/on, input
6-A6	6-A4	5 V DC	5 V DC supply for OSBSW, output
6-A8	6-A7	5/0 V DC	OSWSW off/on, input
6-A9	6-A7	5 V DC	5 V DC supply for OSWSW, output
6-A11	6-A10	5/0 V DC	OSLSW off/on, input
6-A12	6-A10	5 V DC	5 V DC supply for OSLSW, output
6-A14	6-A13	5/0 V DC	DFTSW off/on, input
6-A15	6-A13	5 V DC	5 V DC supply for DFTSW, output
6-B1	6-B3	5 V DC	5 V DC supply for OSSW, output
6-B2	6-B3	5/0 V DC	OSSW off/on, input
6-B4	6-B6	5 V DC	5 V DC supply for OFSW, output
6-B5	6-B6	5/0 V DC	OFSW off/on, input
6-B7	6-B8	5/0 V DC	OSLEDPCB (red) on/off, output
6-B9	6-B8	5/0 V DC	OSLEDPCB (green) on/off, output

3-3-4 Electrical problems

Problem	Causes	Check procedures/corrective measures
(1) The original feed motor does not operate.	Defective original feed motor coil.	Check for continuity across the coil. If none, replace the original feed motor.
	The connector terminals of the original feed motor make poor contact.	Check for continuity across the connector terminals. If none, replace the connector terminals.
	Defective DF driver PCB.	Check for continuity across the original feed motor coil and connector terminals. If good, replace the DF driver PCB.
(2) The original conveying motor does not operate.	Defective original conveying motor coil.	Check for continuity across the coil. If none, replace the original conveying motor.
	The connector terminals of the original conveying motor make poor contact.	Check for continuity across the connector terminals. If none, replace the connector terminals.
	Defective DF driver PCB	Check for continuity across the original conveying motor coil and connector terminals. If good, replace the DF driver PCB.
(3) The original feed solenoid does not operate.	Defective original feed solenoid coil.	Check for continuity across the coil. If none, replace the original feed solenoid.
	The connector terminals of the original feed solenoid make poor contact.	Check for continuity across the connector terminals. If none, replace the connector terminals.
	Defective DF driver PCB.	Check if the original feed solenoid operates when CN5-B13 or CN5-B12 on the DF driver PCB is low. If it does, replace the DF driver PCB.

Problem	Causes	Check procedures/corrective measures
(4) The switchback feedshift solenoid does not operate.	Defective switchback feedshift solenoid coil.	Check for continuity across the coil. If none, replace the switchback feedshift solenoid.
	The connector terminals of the switchback feedshift solenoid make poor contact.	Check for continuity across the connector terminals. If none, replace the connector terminals.
	Defective DF driver PCB.	Check if the switchback feedshift solenoid operates when CN5-B8 on the DF driver PCB is low. If it does, replace the DF driver PCB.
(5) The eject feedshift solenoid does not operate.	Defective eject feedshift solenoid coil.	Check for continuity across the coil. If none, replace the eject feedshift solenoid.
	The connector terminals of the eject feedshift solenoid make poor contact.	Check for continuity across the connector terminals. If none, replace the connector terminals.
	Defective DF driver PCB.	Check if the eject feedshift solenoid operates when CN5-A7 on the DF driver PCB is low. If it does, replace the DF driver PCB.
(6) The switchback pressure solenoid does not operate.	Defective switchback pressure solenoid coil.	Check for continuity across the coil. If none, replace the switchback pressure solenoid.
	The connector terminals of the switchback pressure solenoid make poor contact.	Check for continuity across the connector terminals. If none, replace the connector terminals.
	Defective DF driver PCB.	Check if the switchback pressure solenoid operates when CN5-A2 or CN5-A3 on the DF driver PCB is low. If it does, replace the DF driver PCB.

Problem	Causes	Check procedures/corrective measures
(7) The original feed clutch does not operate.	Defective original feed clutch coil.	Check for continuity across the coil. If none, replace the original feed clutch.
	The connector terminals of the original feed clutch make poor contact.	Check for continuity across the connector terminals. If none, replace the connector terminals.
	Defective DF driver PCB.	Check if the original feed clutch operates when CN5-A5 on the DF driver PCB is low. If it does, replace the DF driver PCB.
(8) "Close feeder cover firmly" is displayed when the SRDF is closed correctly.	The connector terminals of DF safety switch 1 make poor contact.	Check for continuity across the connector terminals. If none, replace the connector terminals.
	Defective DF safety switch 1.	Check for continuity across the contacts of the switch. If none when the switch is on, replace DF safety switch 1.
(9) An original jams when the main switch is turned on.	A piece of paper torn from an original is caught around the original feed switch.	Remove any found.
	Defective original feed switch.	With 5 V DC present at CN6-B4 on the DF driver PCB, check if CN6-B5 of the DF driver PCB remains low when the original feed switch is turned on and off. If it does, replace the original feed switch.
	A piece of paper torn from an original is caught around the original switchback switch.	Remove any found.
	Defective original switchback switch.	With 5 V DC present at CN6-A6 on the DF driver PCB, check if CN6-A5 on the DF driver PCB remains low when the original switchback switch is turned on and off. If it does, replace the original switchback switch.

Problem	Causes	Check procedures/corrective measures
(9) An original jams when the main switch is turned on. (cont.)	A piece of paper torn from an original is caught around the DF timing switch.	Remove any found.
	Defective DF timing switch.	With 5 V DC present at CN6-A15 on the DF driver PCB, check if CN6-A14 on the DF driver PCB remains low when the DF timing switch is turned on and off. If it does, replace the DF timing switch.

3-3-5 Mechanical problems

Problem	Causes/check procedures	Corrective measures
(1) No primary original feed.	The surfaces of the DF forwarding pulleys, DF original feed pulley or DF separation pulley are dirty with paper powder.	Check and clean them with isopropyl alcohol if they are dirty.
	Check if the DF original feed pulley or the DF separation pulley is deformed.	If so, replace (see pages 3-2-2 and 5).
	Check if the DF forwarding pulleys are deformed.	If so, replace (see page 3-2-2).
	Electrical problem with the following clutch or solenoid: • Original feed solenoid • Original feed clutch	See pages 3-3-10 and 11.
(2) No secondary original feed.	The DF registration pulley and the DF registration roller do not contact each other correctly.	Remedy.
(3) Originals jam.	Originals outside the specifications are used.	Use only originals conforming to the specifications.
	The surfaces of the DF forwarding pulleys, DF original feed pulley or DF separation pulley are dirty with paper powder.	Check and clean them with isopropyl alcohol if they are dirty.
	The DF original feed pulley and the DF separation pulley do not contact each other correctly.	Remedy.

CONTENTS

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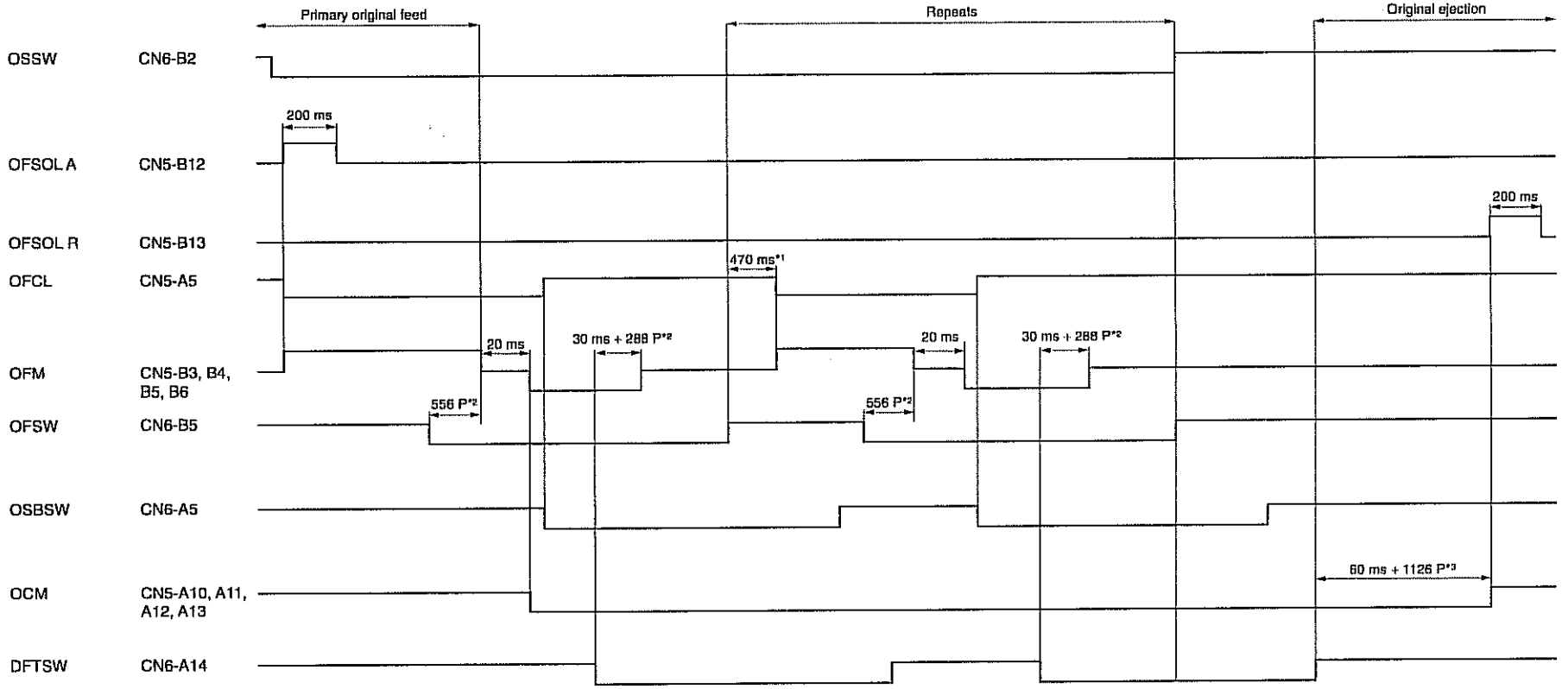
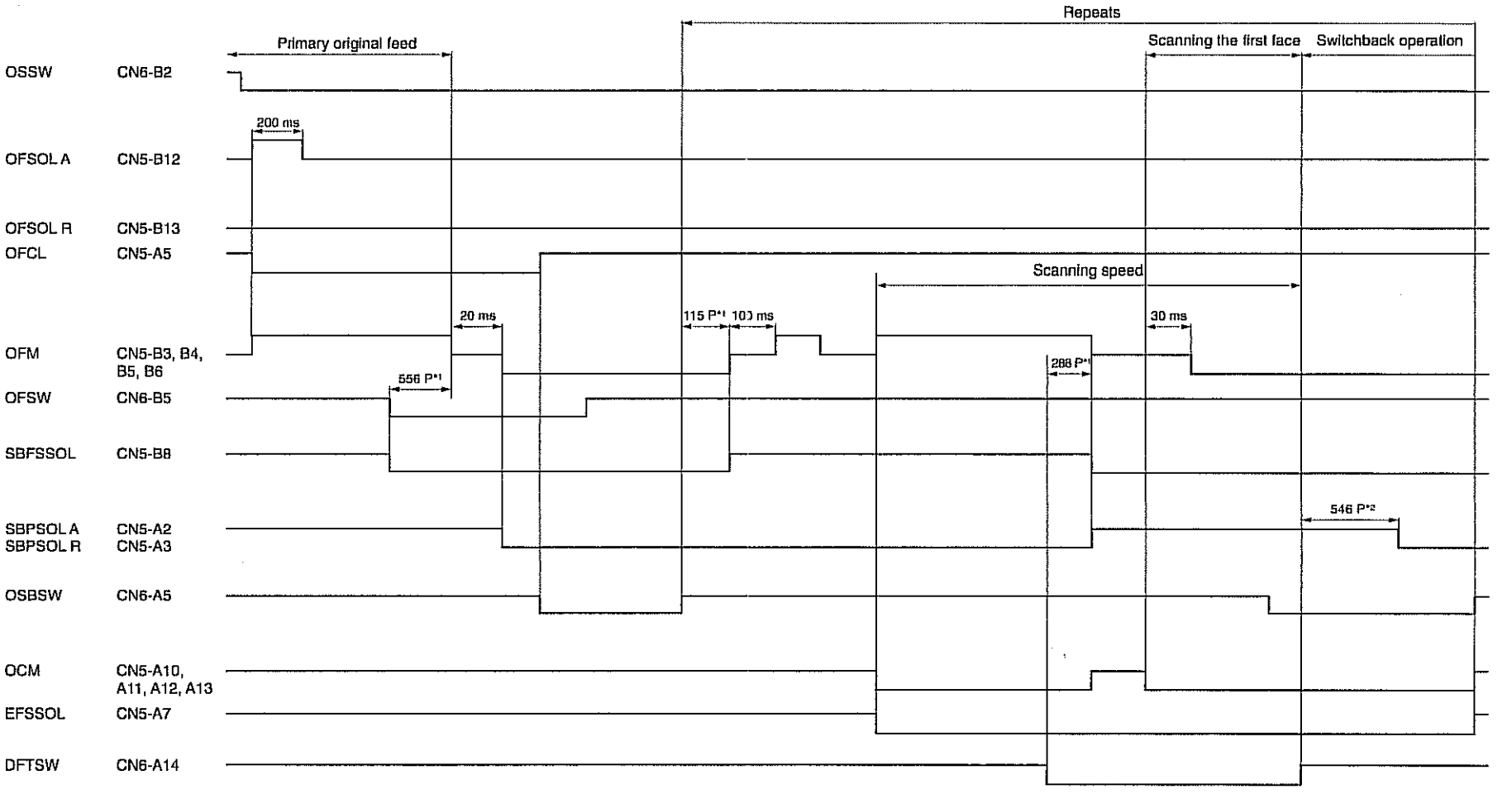
Wiring diagram 3-4-6

Timing chart No. 1 Original feed operation 1: single-sided original mode, multiple originals



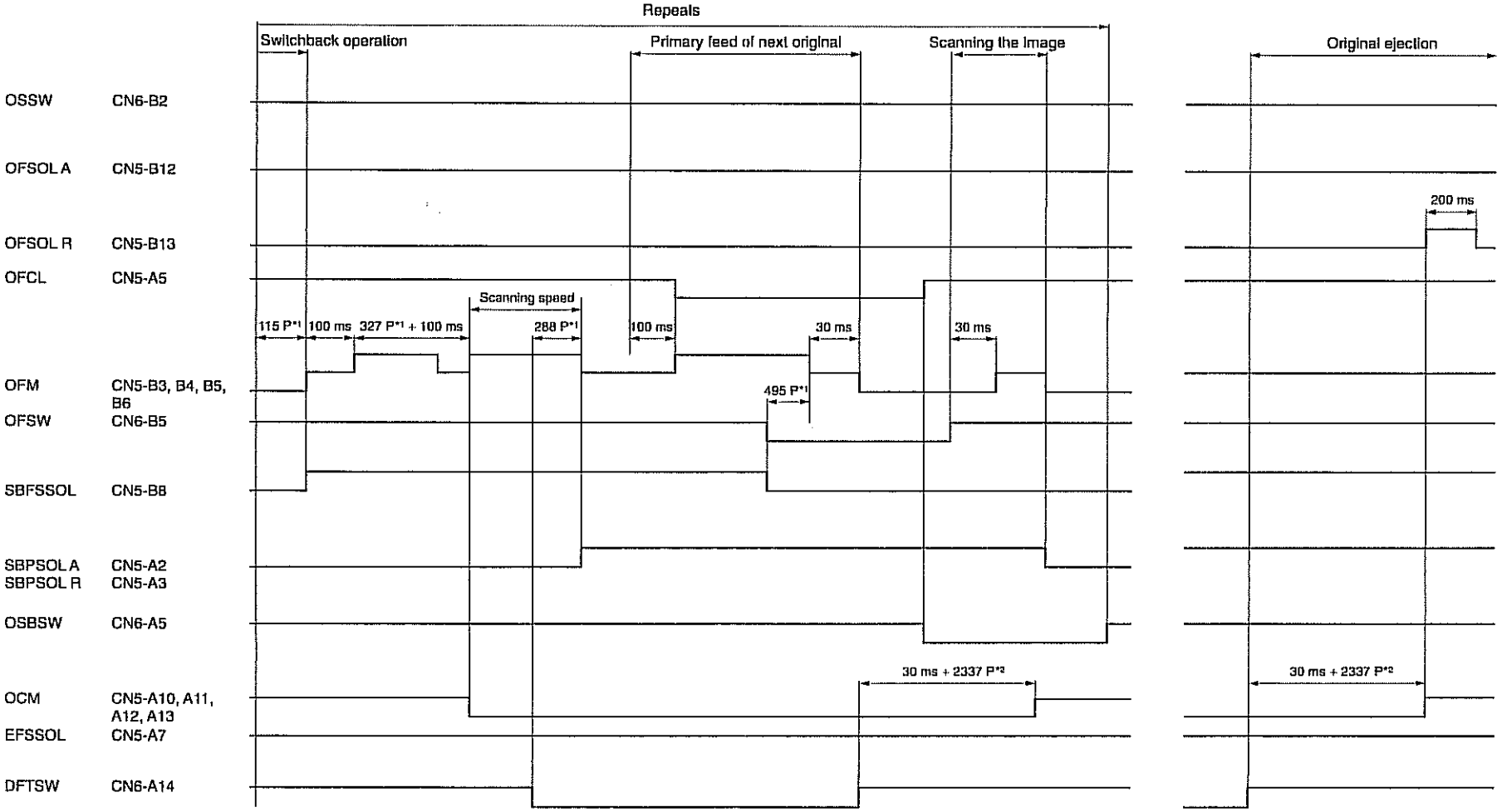
*1 During enlargement copying: (magnification × 10 – 530) ms
*2 Burst of OFM pulses
*3 Burst of OCM pulses

Timing chart No. 2 Original feed operation 2: double-sided original mode, multiple originals ($^1/_2$)



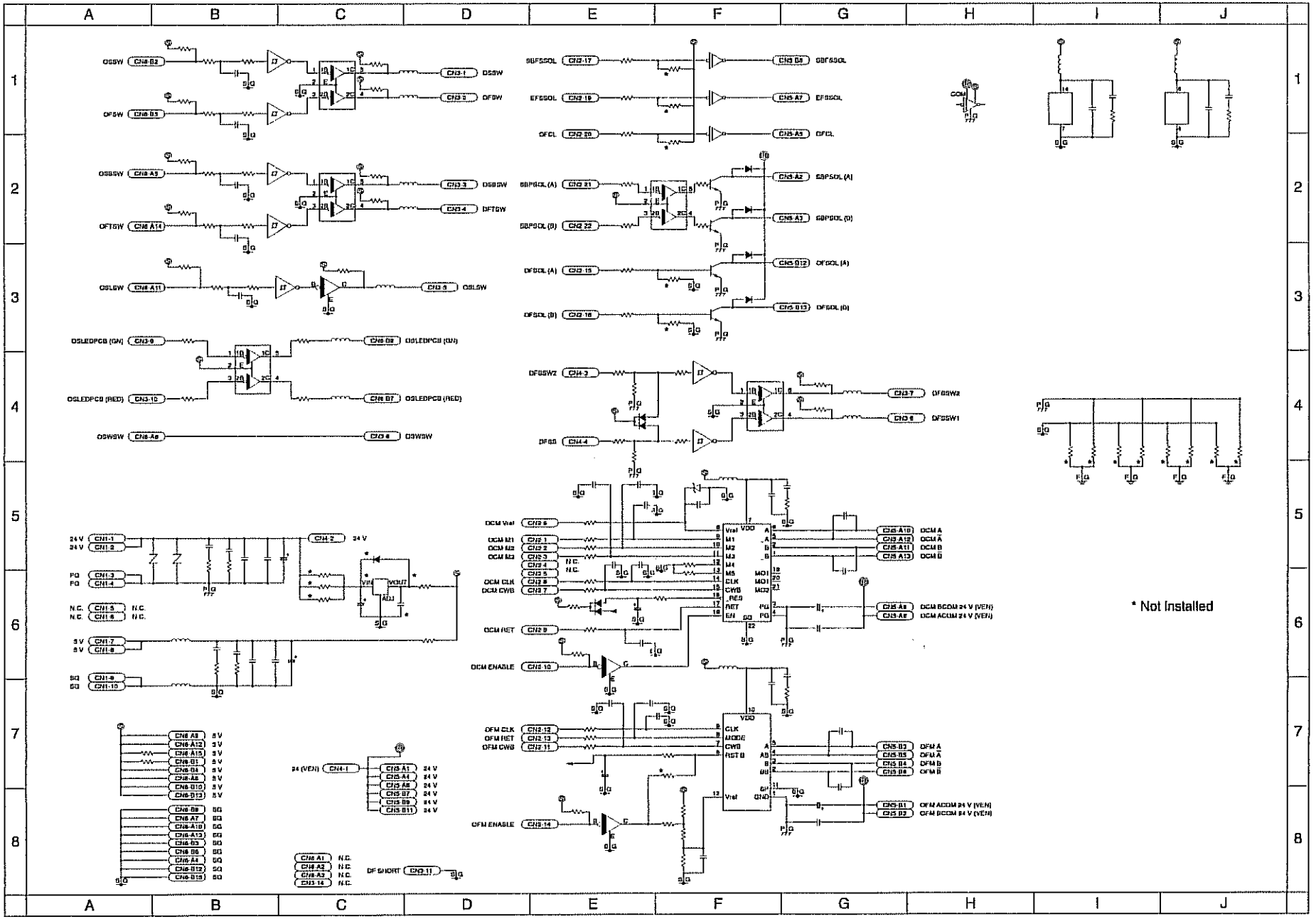
*1 Burst of OFM pulses
*2 Burst of OCM pulses

Timing chart No. 3 Original feed operation 2: double-sided original mode, multiple originals ($^2/_2$)

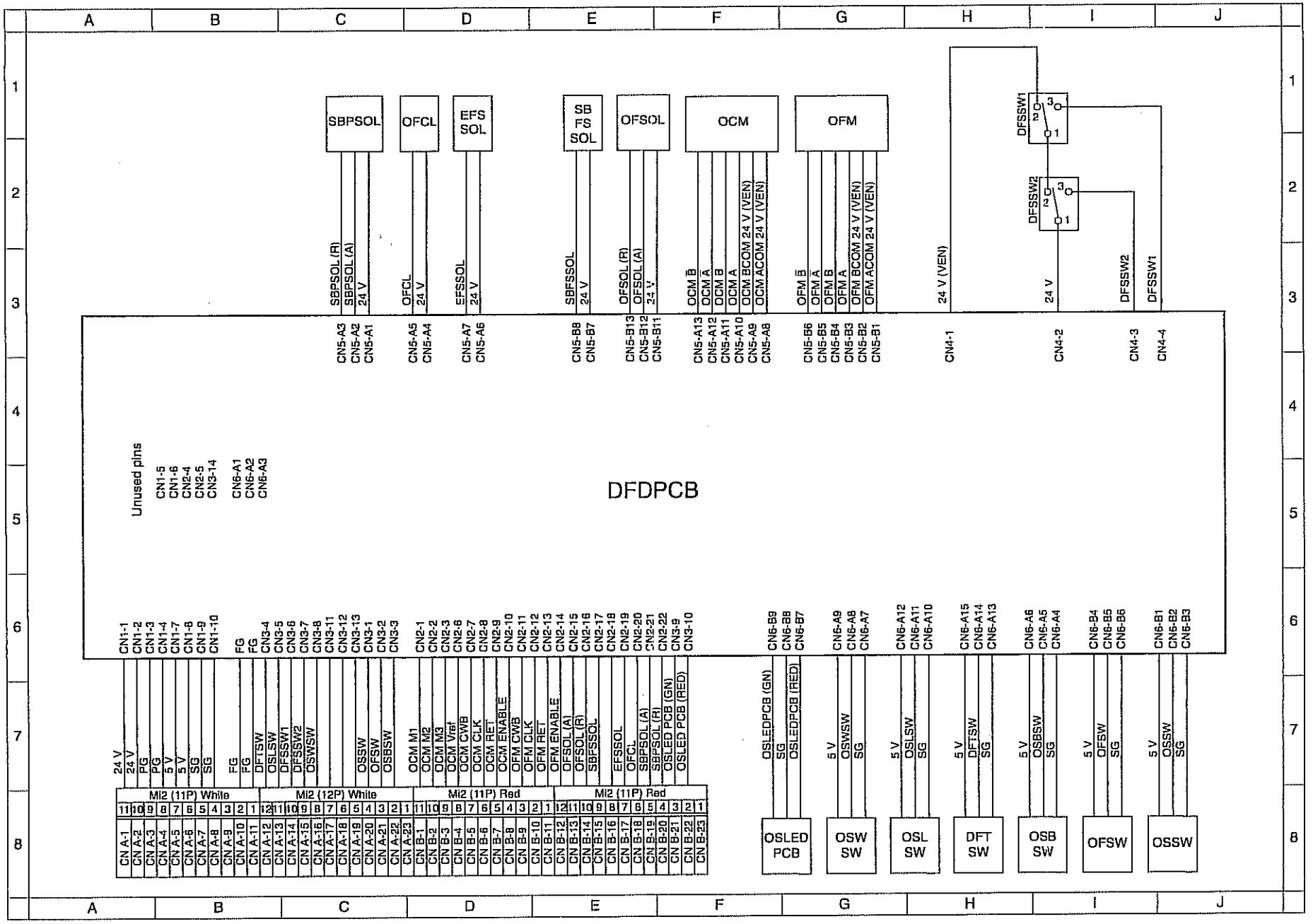


*1 Burst of OFM pulses
*2 Burst of OCM pulses

DF driver PCB



Connection diagram



Wiring diagram